

*The*  
*Condensed Chemical*  
*Dictionary*

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EXHIBIT A



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fractions at high temperatures (1500 to 1700°F). Those containing one double bond are called alkenes, and those with two alkadienes, or diolefins. They are named after the corresponding paraffins by adding "-ene" or "-ylene" to the stem. Alpha-olefins are particularly reactive because the double bond is on the first carbon. Examples are 1-octene and 1-octadecene, which are used as the starting point for medium-biodegradable surfactants. Other olefins (ethylene, propylene, etc.) are starting points for manufactured fibers, of which the polymer comprises at least 85% by weight.

See also diolefin.

**oleic acid** (cis-9-octadecenoic acid; red oil)

$\text{CH}_3(\text{CH}_2)_7\text{CH}:\text{CH}(\text{CH}_2)_7\text{COOH}$ . A monounsaturated fatty acid; a component of almost all natural fats as well as tall oil. Most oleic acid is derived from animal tallow or vegetable oils.

Properties: Commercial grades: Yellow to red oily liquid; lardlike odor; darkens on exposure to air. Insoluble in water; soluble in alcohol, ether and most organic solvents, fixed and volatile oils. Solvent for other oils, fatty acids and oil-soluble materials.

Purified grades: Water-white liquid; sp. gr. 0.895 (20/4°C); m.p. 13.2°C; b.p. 286°C (100 mm), 225°C (10 mm); refractive index 1.4599 (20°C); acid value 196-204; iodine value 83-103; saponification value 196-206. Flash point 372°F; combustible; nontoxic.

Derivation: The free fatty acid is obtained from the glyceride by hydrolysis, steam distillation and separation by crystallization or solvent extraction. Filtration from the press cake results in the oleic acid of commerce (red oil) which is purified and bleached for specific uses.

Grades: Variety of technical grades; grade free from chick edema factor; U.S.P.; F.C.C.; 99+%. A purified technical oleic acid containing 90% or more oleic, 4% maximum linoleic and 6% maximum saturated acids is available.

Containers: Drums; tank trucks; tank cars.

Uses: Soap base; manufacture of oleates; ointments; cosmetics; polishing compounds; lubricants; ore flotation; intermediate; surface coatings; food-grade additives.

**olein** (triolein; glyceryl trioleate)  $(\text{C}_{17}\text{H}_{33}\text{COO})_3\text{C}_3\text{H}_5$ . The triglyceride of oleic acid, occurring in most fats and oils. It constitutes about 70-80% of olive oil.

Properties: Yellow, oily liquid; sp. gr. 0.915; m.p. -4 to -5°C; soluble in chloroform, ether, carbon tetrachloride; slightly soluble in alcohol. Combustible; nontoxic.

Impurities: Stearin, linolein.

Derivation: Refined natural oils.

Use: Textile lubricants.

**oleoresin**. Any of a number of mixtures of essential oils and resins characteristic of the tree or plant from which they are derived. Most types are semisolid and tacky at room temperature, becoming soft and sticky at higher temperatures. They have various distinctive odors. See also balsam; rosin.

**oleoyl chloride** (cis-9-octadecenoyl chloride)

$\text{CH}_3(\text{CH}_2)_7\text{CH}:\text{CH}(\text{CH}_2)_7\text{COCl}$ .

Properties: Liquid; b.p. 175-180°C (3 mm); soluble in hydrocarbons and ethers; reacts slowly with water. Combustible; low toxicity.

Containers: Bottles; carboys; 55-gal drums.

Use: Chemical intermediate.

**N-oleoylsarcosine**  $\text{C}_{17}\text{H}_{33}\text{C}(\text{O})\text{N}(\text{CH}_3)\text{CH}_2\text{COOH}$ .

Properties: Amber liquid; sp. gr. 0.955 (20/20°C); re-

fractive index 1.4703 (n 20/D). About 95% pure. Combustible.

Containers: Drums; tanks.

Use: Surfactants.

**oleum**. The Latin name for oil. Also applied to fuming sulfuric acid (q.v.).

**oleyl alcohol** (octadecenol)

$\text{CH}_3(\text{CH}_2)_7\text{CH}:\text{CH}(\text{CH}_2)_7\text{CH}_2\text{OH}$ . The unsaturated alcohol derived from oleic acid. Clear viscous liquid at room temperature. Iodine value 88, cloud point 20°F, boiling point 333°C; f.p. -7.5°C. Sp. gr. 0.84. Combustible; low toxicity.

Impurities: Linoleyl, myristyl and cetyl alcohols.

Derivation: Reduction of oleic acid; occurs in fish and marine mammal oils.

Grades: Technical; commercial (80-90% pure).

Uses: Chemical synthesis, petroleum additives, surfactants; polymers; plasticizer; antifoaming agent.

**oleyl aldehyde**. See octadecenyl aldehyde.

**oleylhydroxamic acid**  $\text{C}_{17}\text{H}_{33}\text{CONHOH}$ .

Properties: Waxy solid; off-white color; sp. gr. 0.897 (70/25°C); insoluble in water; soluble in aqueous potassium hydroxide and organic solvents.

**oleyl-linoleylamine** (octadecene-octadecadieneamine).

Properties: Highly unsaturated primary amine; soluble in many organic solvents; insoluble in water. Sp. gr. 0.83; m.p. 19°C; b.p. 198-209°C; amine no. 200-210; iodine value 90 min.

Use: Organic intermediate.

**oleyl methyl tauride**. See sodium N-methyl-N-oleoyl taurate.

**oligo-** A prefix meaning "a few" or "very little." See following entries.

**oligodynamic**. Literally, active in small amounts. In technical literature, the term describes the sterilizing or purifying action of a substance, e.g., silver.

**oligomer**. A polymer molecule consisting of only a few monomer units (dimer, trimer, tetramer).

**oligopeptide**. A peptide made up of not more than ten amino acids.

**oligosaccharide**. A carbohydrate containing from two up to ten simple sugars linked together (e.g., sucrose, composed of dextrose and fructose). Beyond ten they are called polysaccharides.

**olive oil**.

Properties: Pale yellow or greenish-yellow liquid; a nondrying oil; slight odor and taste. Soluble in ether, chloroform and carbon disulfide; sparingly soluble in alcohol. Sp. gr. 0.910-0.918; saponification value 188-196; iodine value 77-88. Flash point 437°F; combustible; nontoxic. Cloud point 20-30°F.

Derivation: By expressing the pulp of the fruit of the olive tree, *Olea europea*, cultivated in Spain, Greece, Tunisia and Turkey.

Chief constituents: oleic acid, palmitic acid, linoleic acid.

Grades: U.S.P.; edible; commercial; sulfur oil (olive oil foots). The edible and commercial oils are obtained by expression, and the last grade by extraction, usually with carbon disulfide.

Containers: Drums.

Uses: Salad dressings and other foods; ointments; liniments, etc.; Castile soap; special textile soaps; lubricant; sulfonated oils; cosmetics.

**olivine** (chrysolite)  $(\text{Mg}, \text{Fe})_2\text{SiO}_4$ . Natural magnesium-iron silicate, found in igneous and metamorphic

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**monofilament.** A single, continuous strand of glass or synthetic fiber as extruded from a spinneret. See filament.

**"Monofrax."**<sup>442</sup> Trademark for a line of fused-cast refractories.

**monoglyceride.** A glycerol ester of fatty acids in which only one acid group is attached to the glycerol group. A typical formula is  $\text{RCOOCH}_2\text{CHOHCH}_2\text{OH}$ . Small amounts of monoglycerides occur naturally.

Derivation: Produced synthetically by the alcoholysis of fats with glycerol, yielding a mixture of mono-, di-, and triglycerides which is predominantly monoglycerides.

Uses: Emulsifiers; cosmetics; lubricants.

See glycerol monostearate, glycerol monolaurate, etc.

**monohydric alcohol.** An alcohol in which a hydroxyl group ( $-\text{OH}$ ) has replaced one of the hydrogen atoms of a hydrocarbon; for example:

$\text{C}_2\text{H}_5\text{H}$	$\text{C}_2\text{H}_5\text{OH}$
ethane	ethanol
RH	ROH
alkane	alkyl alcohol

There are a number of classifications analogous to those of hydrocarbons: (1) paraffinic or simple alcohols, whose formula may be represented as  $\text{C}_n\text{H}_{2n+1}$ ; (2) olefinic or fatty alcohols, which contain one or more double bonds; (3) alicyclic alcohols, closed ring structures which may or may not contain a double bond, e.g., cyclohexanol; (4) aromatic alcohols, in which the hydroxyl group is attached to a benzene nucleus, as in phenol; (5) heterocyclic alcohols, based on the pentagonal furan ring; and (6) polycyclic alcohols of high molecular weight, known collectively as sterols. Any of these types that contain 12 or more carbon atoms are semisolid to solid, and have a wax-like consistency; the others are colorless liquids.

Monohydric alcohols are also classified as primary, secondary, or tertiary, on the basis of the number of alkyl (methyl) groups substituted for the hydrogen atoms on the central or methanol carbon atom. See also primary.

**monomer (momer).** A molecule or compound usually containing carbon and of relatively low molecular weight and simple structure, which is capable of conversion to polymers, synthetic resins or elastomers by combination with itself or other similar molecules or compounds. Thus, styrene is the monomer from which polystyrene resins are produced; vinyl chloride is the monomer of polyvinyl chloride. Other common monomers are methyl methacrylate; adipic acid and hexamethylenediamine.

**monomethylamine.** Legal label name (Rail) for methylamine (q.v.).

**monomolecular film.** See film.

**"Monopentek."**<sup>138</sup> Trademark for monopentaerythritol. See pentaerythritol.

**"Monoplas."**<sup>263</sup> Trademark for a group of monomeric phthalates used as plasticizers.

**"Monoplex."**<sup>23</sup> Trademark for monomeric liquid plasticizers for polyvinyl chloride and other high polymers. Primarily esters, but also some epoxides which impart heat and light stability.

Uses: Plasticizers, stabilizers, processing aids.

**"Monopole oil."**<sup>309</sup> Trademark for a double sulfonated castor oil used as a textile auxiliary.

**monopropellant.** A propellant which combines fuel and oxidizer in one compound or mixture. Gunpowder is an example of a solid monopropellant. Liquid monopropellants, for rockets, include: methyl nitrate; nitromethane; a mixture of hydrocarbons with tetranitromethane; a mixture of methyl nitrate and methanol. See also rocket fuel.

**monosaccharide.** Any of several simple sugars having the formula  $\text{C}_6\text{H}_{12}\text{O}_6$ ; the best-known are glucose, fructose and galactose. Monosaccharides combine to form more complex sugars known as oligo- and polysaccharides.

**monosodium glutamate.** See sodium glutamate.

**monostearin.** See glycerol monostearate.

**monosulfonic acid F.** See 2-naphthol-7-sulfonic acid.

**"Monosulph."**<sup>309</sup> Trademark for straight sulfated castor oil for defoaming and leveling. Used to improve flow characteristics of coating formulations.

**"Monotan."**<sup>309</sup> Trademark for a series of synthetic tanning compounds of the aminoplast resin type.

**"Mono-Thiurad."**<sup>58</sup> Trademark for bis(dimethylthiocarbamyl)sulfide (q.v.).

**montan wax (lignite wax).**

Properties: White, hard earth wax; crude product dark brown; m.p. 80–90°C. Soluble in carbon tetrachloride, benzene, and chloroform; insoluble in water. Combustible; nontoxic.

Derivation: By countercurrent extraction of lignite. American and German lignite are usual sources.

Method of purification: Distillation with superheated steam.

Grades: Crude; refined.

Uses: Substitute for carnauba and beeswax; shoe and furniture polishes; phonograph records; roofing paints; rendering paints waterproof; adhesive paste; electric insulating compositions; paper-sizing compositions; carbon papers; wire coating; sun-crack preventive in rubber products.

**"Montar."**<sup>58</sup> Trademark for a series of related brown to black synthetic resins; softening point. 120–250°C. Used to impart fire resistance.

**montmorillonite.** A type of clay whose composition is approximately  $\text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2 \cdot \text{H}_2\text{O}$ . One of the major components of bentonite (q.v.).

**monuron.** Generic name for 3-(para-chlorophenyl)-1,1-dimethylurea (CMU)  $\text{ClC}_6\text{H}_4\text{NHCON}(\text{CH}_3)_2$ .

Properties: White, crystalline, odorless solid; m.p. 175°C. Very low solubility in water and hydrocarbon solvents. Slightly soluble in oils. Stable toward oxidation and moisture.

Hazard: Moderately toxic by ingestion.

Use: Herbicide.

**"Mo-Permalloy."**<sup>155</sup> Trademark for a magnetic alloy. Properties: Density, 8.72 gm/cm<sup>3</sup>; tensile strength, 85,000 psi.

Used in laminated cores for high quality communication inductors, transformers and magnetic field detectors.

**mordant.** A substance capable of binding a dye to textile fiber. The mordant forms an insoluble lake (q.v.) in the fiber, the color depending on the metal of the mordant. The most important mordants are trivalent chromium complexes, metallic hydroxide

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